RENNCO INCORPORATED
PACKAGING MACHINES AND SYSTEMS

HEAT SEALING MACHINES

MODEL 18 LS

MODEL 24 LS

Operation, Maintenance, & Parts Manual

Serial No. _____

Model No. _____

CAUTION: For Safety, read Installation and Operation carefully, before using your new RENNCO MODEL LS HEAT SEALER.

For Service Contact:
Packaging Machines and Systems
23721 M-60 West, P.O. Box 116
Homer Michigan, 49245 USA
E-mail: liftseal@rennco.com
Phone: 1-800-409-5225
Fax: 517-568-4798

Please have the model number and serial number available when contacting Rennco regarding service or parts ordering. Model number and Serial number are also located on the Left Hand Side of the Machine.

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1 Receiving

1.1 *Inspection*

Your Rennco Packaging System has received a thorough inspection before shipment. At time of delivery, please inspect all containers for any concealed damage or shortage. If damage is evident, note this on all freight bills and have the delivery driver sign them. File a claim with the carrier as they are responsible for any damage that occurs in shipment. For Rennco's records, and so that we may assist you, please notify us as soon as possible.

1.2 *Uncrating*

With care remove the protective materials used for shipping and handling. Remove all items from shipping container (spare parts, operation manual, etc.).

2 Introduction

2.1 *About Rennco*

Rennco, Incorporated, located in Homer, Michigan, was established in 1969. Rennco introduced to the packaging machinery market a new, simplified, cost-effective sealer for a wide variety of products that are packaged in centerfolded polyethylene, polyolefin, and PVC films. At the heart of every packaging machine is Rennco's uniquely designed constantly heated, coated seal bar which provides a smokeless, odorless, low maintenance sealing system. Rennco now markets and sells its packaging machinery and systems through domestic and international distribution programs and works directly with manufacturers of food service disposable products.

The Rennco line of vertical L-Bar sealer machinery includes equipment capable of packaging products in polyethylene, polyolefin, and PVC films in bag sizes ranging from 2" x 2" to 22" x 52". Rennco offers a broad range of machinery from semiautomatic, hand-loaded sealers to systems with specially designed product handling, counting, accumulating, and feeding devices for complete automation.

In addition, Rennco is the exclusive Master Distributor for Hugo Beck, one of the worlds leading manufacturers of horizontal form, fill and seal machinery. This cooperative agreement between Rennco and Hugo Beck offers North America flexible packaging machine customers a new and exciting product offering.

Rennco continuously incorporates the latest technology in designing and manufacturing its complete line of packaging machinery and systems. Whether using a standard sealer for a hand-loaded application or integrating a system to totally automate your packaging line, Rennco is committed to providing you with state of the art, quality equipment.

Since 1969, the Rennco Team has partnered with customers to solve packaging problems. Rennco is dedicated to providing on-going excellence in its packaging machines and in the way it does business.

2.2 *Mission Statement*

Our mission is to build high quality, technologically advanced, reliable equipment and provide the flexible service that supports it. We operate on the premises that our customer is our partner and their success is ours. We believe that providing equipment alone is not enough. To ensure the reliability of our equipment, accurate, comprehensive and timely documentation and effective training is KEY to its ongoing efficiency.

2.3 *Warranty*

The basic warranty of Seller's equipment is for a period of 12 months. Seller warrants each part to be free of defects in material and/or workmanship, for a period of 12 months to the original Customer. Each part found to be defective shall be replaced free of charge. Labor incurred in removing or installing the defective part is not covered by this warranty. Labor will be included if equipment is returned to our factory during the one-year warranty.

The above warranty does not extend to goods damaged after date of shipment from Seller's plant where the damage is not directly due to a defect in material or workmanship, nor does it apply to goods altered or repaired by anyone other than Seller's authorized employees.

The above warranty does not extend to failure or damage due to negligence (other than that of Seller), accident, abuse, improper installation (other than installation made by Seller), improper operation; use under abnormal conditions of temperature, moisture, dirt or corrosion, or use with abrasive or corrosive materials.

Seller will either examine the products at their site, or issue shipping instructions for return to Seller (transportation costs prepaid by customer). Any products which Seller determines not defective as a result of faulty workmanship or material shall be held subject to Customer's disposition instructions upon payment by Customer of the transportation and other charges, if any, advanced or to be advanced by Seller thereon.

2.4 *Customer Service*

2.4.1 Factory Service

Our technical staff is trained to provide answers to all your questions quickly and completely. From mechanical adjustments to electrical controls and PLC programming to recommended maintenance, we are here to help. We can be reached at 800-701-1343, liftseal@rennco.com, or parts.rennco.com.

Always have the model number and serial number available when contacting Rennco regarding service or parts ordering.

2.5 *Standard Specifications*

2.5.1 18 LS

18 LS

SPEED:	2.5 seconds per seal
WEIGHT:	46 lbs
PACKAGE SIZE:	18"
PRODUCT SIZE:	19 1/4" wide x 10 1/4" deep x 7 1/4" high
ELECTRIC REQUIREMENT:	120 volts, 5 amps

DESCRIPTION:

The Rennco Lift SealTM Heat Sealer is ready for use after a short "warm-up" period. Simply adjust the temperature control knob for the material being used, place the edge of the bag in the seal area, lift the safety bar, and the Lift SealTM automatically makes a 1/2" seal with approximately 30 PSI of consistent sealing pressure. In approximately 2 seconds, the lower safety bar automatically opens for easy removal of the bag. Constant temperature is maintained by an internal heat control during the sealing process. The Lift SealTM Heat Sealer will not cycle if an object exceeding 1/8" thick is in the sealing area, providing safe operation.

The Rennco Lift SealTM Heat Sealer is quick and easy to operate and maintain. The lower silicone rubber bar is raised by a rugged mechanical drive to meet the stationary 1/2" wide heated sealing bar above. This bar is covered with a special "non-stick" fabric which is manually advanced by a simple turn of a screw as the fabric becomes worn. The fabric roll is ample for months of use and is quickly replaced by snapping the new roll into position.

OPTIONS:

- 240 Volt Electrics

2.5.2 24 LS

24 LS

SPEED:	2.5 seconds per seal
WEIGHT:	60 lbs
PACKAGE SIZE:	24" wide
PRODUCT SIZE:	25 3/4" wide x 10 1/4" deep x 7 1/4" high
ELECTRIC REQUIREMENT:	120 volts, 5 amps

DESCRIPTION:

The Rennco Lift Seal TM Heat Sealer is ready for use after a short "warm-up" period. Simply enter the temperature setting for the material being used, place the edge of the bag in the seal area, lift the safety bar, and the Lift SealTM automatically makes a 1/2" seal with approximately 30 PSI of consistent sealing pressure. In approximately 2 seconds, the lower safety bar automatically opens for easy removal of the bag. Constant temperature is maintained by an internal heat control during the sealing process. The Lift SealTM Heat Sealer will not cycle if an object exceeding 1/8" thick is in the sealing area, providing safe operation.

The Rennco Lift SealTM Heat Sealer is quick and easy to operate and maintain. The lower silicone rubber bar is raised by a rugged mechanical drive to meet the stationary 1/2" wide heated sealing bar above. This bar is covered with a special "non-stick" fabric which is manually advanced by a simple turn of a screw as the fabric becomes worn. The fabric roll is ample for months of use and is quickly replaced by snapping the new roll into position.

3 Safety Information

3.1 *Who Should Read This Manual*

All personnel who operate, set up, repair, maintain, or train others on the operation of the machinery must read the safety related information that is included in this manual.

It is the responsibility of the end user of this product to properly train their employees on the safe operation of the equipment. This manual should be used in that training.

3.2 *Warnings*

FAILURE TO OBSERVE CAN CAUSE SEVERE PERSONAL INJURY

- Do not place hands or objects other than bags into jaw opening.
- Do not operate the equipment with guarding removed.
- Do not bypass or cut the ground lug from any electrical connection. The customer is responsible for providing a grounded electrical service.
- Do not place any part of the body near moving machine parts. Have hands in full view at all times.
- Do not allow a person to operate the machinery while another is near moving machine parts.

3.3 *Safety Instructions*

3.3.1 Safety Guard Panels

Safety panels are used to cover areas that rarely require access. Because there is no safety interlock switch, the system can operate with the panels removed. For this reason, the units electric supply should be turned off before a fixed panel is removed.

3.3.2 Safe Operating Techniques

3.3.2.1 Unplug Machine While Servicing

Remove the Electrical plug from the outlet to reduce the risk of Electrical Shock.

3.3.2.2 Loose Clothing

Loose fitting clothing can get caught in moving machine parts and can cause injury. For this reason, always wear snug fitting clothing and do not wear long sleeves or neckties while working on equipment.

3.3.2.3 Allow to Lift Seal to cool before maintaining

Hot surfaces inside the seal assembly, allow to cool before maintaining.

4 Installation

4.1 *Placing the Lift Seal*

Place the Lift Seal in a convenient operating location on a flat hard surface away from papers and other flammable objects.

4.2 *Plugging in the Lift Seal*

Plug in the Lift Seal in the appropriate power outlet.

NOTE:
The standard 110v system should plug into a standard outlet. The 220 v machine requires a different voltage and different outlet.

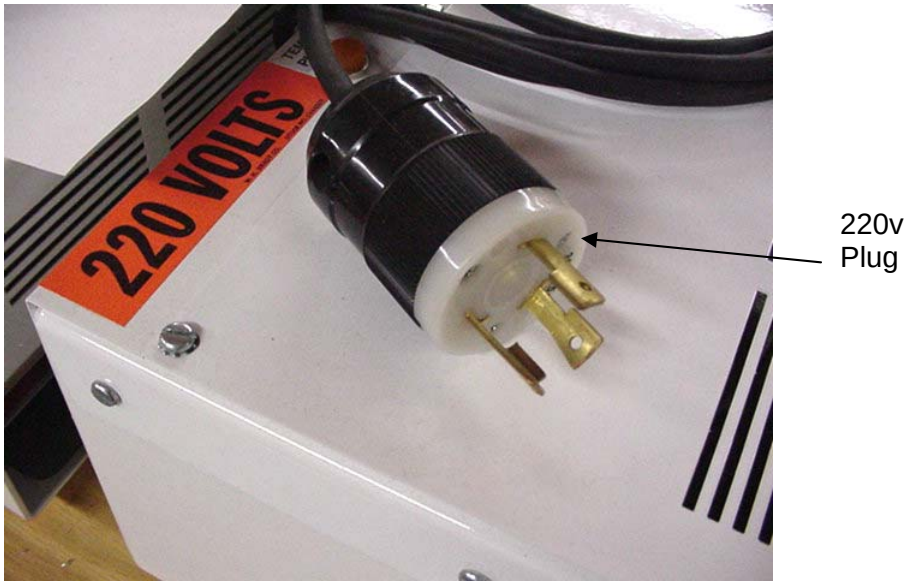


Figure 4-1 220v Lift Seal Plug

5 Operation Information

5.1 *Start-up Procedure*

To ready the Model LS for operation, plug the power cord into an outlet of proper rating. Turn the main "On-Off" switch to "On". On the 110 volt machines the power indicator lamp is green, on the 220 volt machines it is a red lamp. In either case this lamp glows indicating the machine is under power. Adjust "Temperature Control" knob as described in 2.3.

An amber "Temp Pilot" lamp glows until the set temperature is reached, indicating the sealing bar is being brought to temperature. At initial start-up, this warm-up will take 7 to 10 minutes, after which the machine is ready for use. (NOTE: the "Temp Pilot" lamp will cycle on and off indicating the machine is maintaining temperature. After initial warm up it is not necessary to stop sealing when the lamp is glowing, or re-adjust "Temperature Control".)

5.2 *Temperature Control Adjustment*

A knob located on the front cover adjusts the temperature of the sealing bar, located just behind the cover, above the jaw opening. This bar reaches temperature in excess of 400 degrees.

DO NOT PLACE HANDS OR OBJECTS OTHER THAN BAGS INTO JAW OPENING.

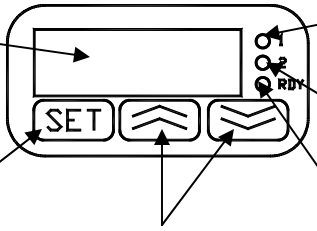
The reference scale on the temperature adjustment serves as a guide in selecting the proper temperature in relation to the type of bag material being used.. The following settings are approximate and it may be necessary to increase or decrease the setting to achieve the best seal. Set the temperature at the highest setting that will give a good seal.

Polyehylene Bags	5 to 6	Tyvek Pouches
Paper/Plastic Pouches	7 ½ to 8 ½	Autopak Pouches

In making temperature adjustments, note condition of the amber lamp, allowing ample time for heating up or cooling down before making any further adjustment. For best results, make only slight adjustments allowing temperature to change until the desired seal is achieved.

5.3 *Using the Temperature Control*

Alphanumeric Display
Shows actual temperature. Shows set point temperature or menu items depending on the key combination pressed.



LED 1
Is lit when output 1 is applying voltage to heater.

LED 2
Indicates an alarm condition. When lit, no voltage is being applied to the heater.

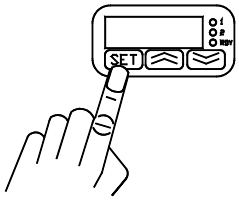
Set Key
Used to shift between normal display and set values

Up/Down Arrow Keys
Select new information when SET key is pressed. Steps through software menu items.

RDY
Not used

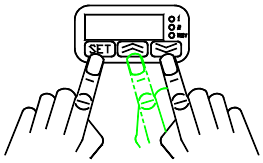
To ***SEE*** the existing setting of any item that appears on the display:

Press the SET key.



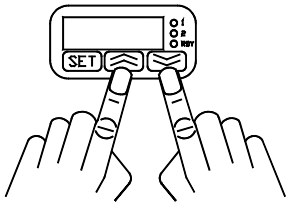
To ***CHANGE*** the setting of any item that appears on the display:
FIRST
Press and **hold** the SET key to display the existing setting.
NEXT
Press the UP or DOWN keys to display and select from the available menu items or to adjust the temperature.
Release the keys to accept the selection.

HOLD

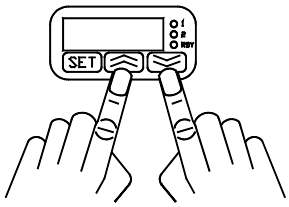


ADJUST

To Enter the Operation Menu:
Press and **hold** both the UP and DOWN keys simultaneously for 2 seconds.
Do the same thing from any menu item to leave the menu and return to the normal display.
This is also a good way to 'start over' if you become confused or need to go from one menu to another. For example to go from **CnFg** to **Pid.**



5.4 *Temperature Control Menu Navigation*



Hold 2 Seconds

Operation Menu

Menu Item	Setting
Aut (start Autotune?)	no
ALO	32
AhI	500
Pid (Go to Pid menu?)	no
CnFg (Go to Config menu?)	no

Choose Yes

Choose Yes

Choose Yes

Pid Menu

Menu Item	Setting
Pbh	***
Cth	0.5
It	***
DE	***
CAL	***

*** Do not change values marked with asterisk. They are established by the Autotune function.

Config Menu

Menu Item	Setting
In	J
C_F	F
rL	32
rh	500
Ot1	hEAt
Ot2	AL7
dlSp	Ac
ALty	Prno
AHyS	5
LAt	no
SIL	no
FAIL	bPLS
SLOC	no
tAg	PCO

Setting the ‘tAg’ to PCO locks the control and only Autotune and temperature preset functions are accessible. The ‘tAg’ must be set to a blank screen to unlock the menus.

5.5 *Loading and Sealing the Bag*

1. Load the Bag

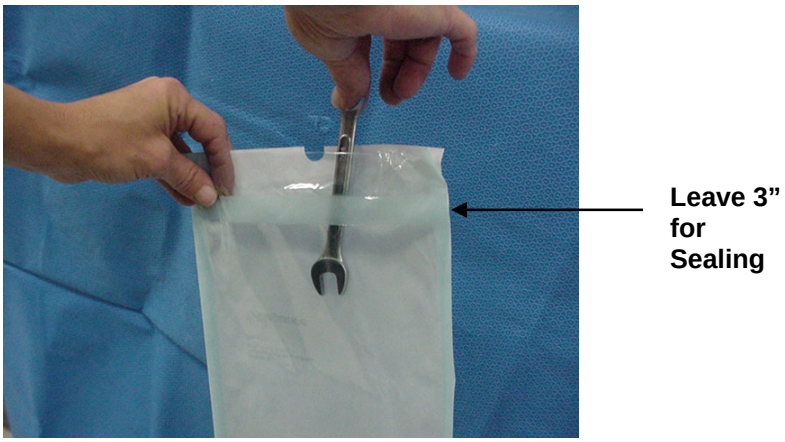


Figure 5-1 Loading the Bag

Pull the two sheets away from one another and Load the Bag leaving at least 3” at the Top of the Bag for Sealing

2. Grip the Bag

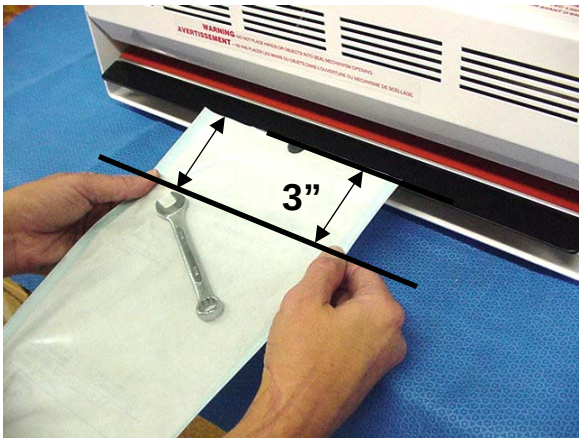


Figure 5-2 Gripping the Bag

Grip the bag about 3 inches from the open end.

3. Insert Bag

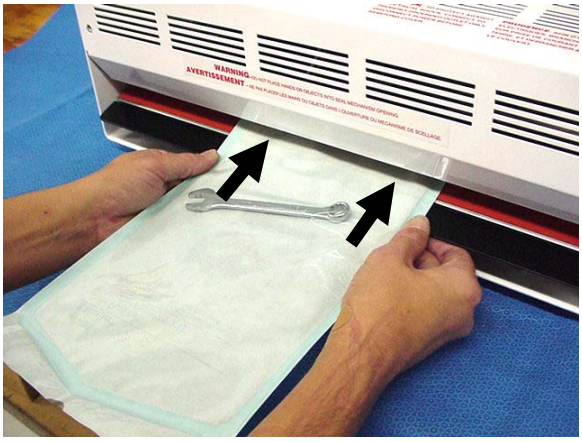


Figure 5-3 Inserting the Bag

Insert the Bag into the jaw opening, clear side up.

WARNING: DO NOT PLACE FINGERS IN JAW OPENING

4. Lift Bar

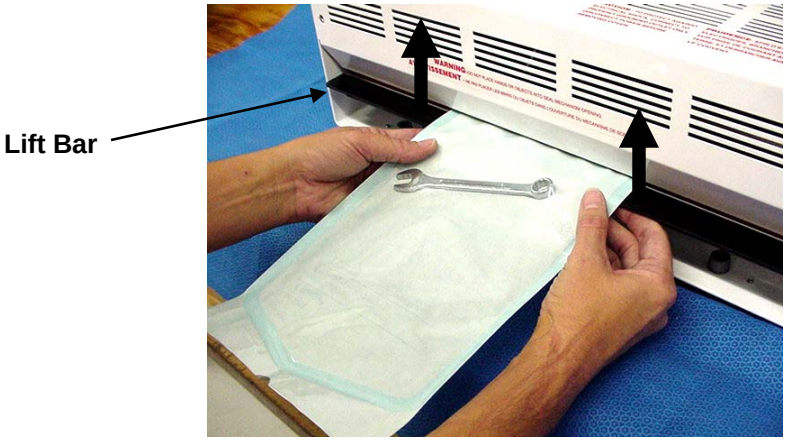


Figure 5-4 Lifting the Lift Bar

With the index fingers under the “Lift Bar” and the thumbs over the bag edge, grip the bag and bar together and lift bar while still grasping the bag.

5. Bag Released

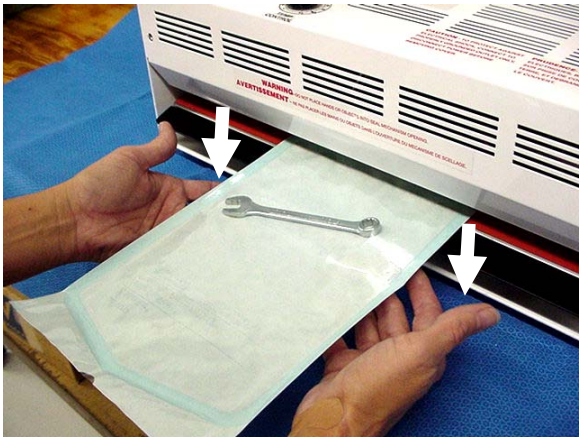


Figure 5-5 Machine Releasing the Bag

When the seal is complete, the machine will open automatically, releasing the bag.

6. Remove Sealed Bag

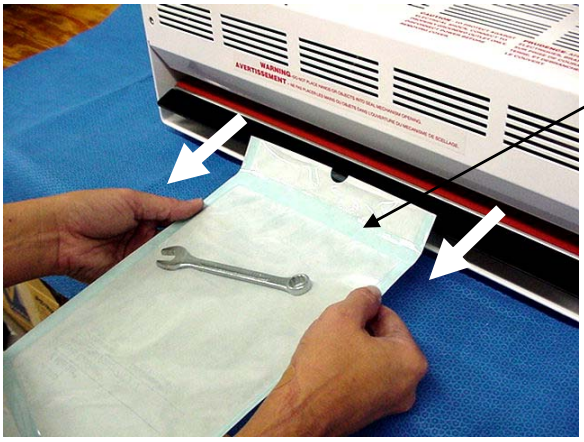


Figure 5-6 Removing the Sealed Bag

Remove the sealed bag.

6 Trouble Shooting

6.1 *Trouble Shooting Chart*

Problem	Cause	Corrective Action
Unit Will Not Turn On	Turned Off	Turn On
	Unplugged	Plug in
	Breaker Tripped.	Reset Breaker
	Motor Burned out	Replace Motor
Poor Seal Quality	Temperature is too low	Increase Temperature
	Heating Element is not functioning	Replace Heating Element
	Silicone Rubber Dirty	Clean Silicone Rubber
Bag Burning	Too much Heat	Turn Heat Down
	Teflon Cloth Worn	Adjust Teflon Cloth to new position

6.2 *Responding to Error Codes*

The temperature control will indicate an error code under the following conditions:
Er 1 This indicates that the thermocouple lead wires are connected in reverse, + to -. This is usually caused when the thermocouple has been replaced and the wires are hooked up in reverse. Note that red is negative (-), and white is positive(+). If they have been reversed, no damage will result, but the wires will have to be connected properly in order to continue machine operation.

Er 2, Er 3 These relate to thermocouple mismatch conditions not normally encountered. If you see these, consult the factory.

Er 4 This indicates an open circuit in the thermocouple, bad connection, or broken wire. Check all connections and wire from the thermocouple to their termination inside the electrical enclosure. If all this checks out, then replace the thermocouple.
Clearing the Error Code
All that is required to clear the error code is to correct the problem. At that point the unit will automatically resume normal operation.
Alarm conditions

When the control is programmed at the factory, a "High Limit" value of 600 degrees F(315 degrees C) is entered as the highest value that can be set. The control will not allow you to enter a higher value.
Also, if the thermocouple sees a temperature above the high limit, the control will interrupt the power to the heating element.
When this happens, the display will flash 'HI' and the #2 Lamp will turn on continuously, indicating that the alarm output is turned on.
Generally the 'HI' alarm is caused by setting the temperature to near the 'High Limit', and can be rectified by lowering the temperature set point a few degrees.

6.3 *Correcting Temperature Control*

CAUTION:
Attempting to alter the menu settings without proper understanding will lead to problems with machine operation. For this reason, the menus have been "locked out" so that they do not confuse the operator and lead to problems caused by misadjustment. The menu structure diagram on the following pages is provided solely for the purpose of setting up a replacement controller, or to correct a controller that has been tampered with.

The setup procedure involves 4 steps (read through all the steps before beginning). Refer to the diagrams on the following pages for menu descriptions.

Step 1: "Unlocking" the new control to gain access to the menu structure.
Enter the OPERATION menu. Select CnFG and enter YES which takes you to the CONFIGURATION menu. Go to tAG and set to a blank screen. The control is now unlocked.

Step 2: Stepping through the control menus entering the values as indicated on the Menu Structure Diagram on the following pages.
While still in the CONFIGURATION MENU, step through each menu item entering the appropriate value.
Note: When you set the C_F value to C (centigrade degrees), then you must enter all temperature related numbers in centigrade degrees. If you set the C_F to F (fereinheit degrees) then all temperature related numbers must be in fereinheit degrees.
When finished, leave the CONFIGURATION menu and return to the temperature display.
Enter the OPERATION menu again. Go into the Pid menu. Note that there are some items that you do not enter a value for at this time. The autotune procedure that follows will take care of these. Enter values only for items indicated. When finished leave the Pid menu and return to the temperature display.
Enter the OPERATION menu again. Set the AhI and ALO values. When finished leave the OPERATION menu and return to the temperature display. Adjust the temperature setpoint to about 400F(205C).

Step 3: "Auto Tuning" the control
Enter the OPERATION menu, select Aut and set to YES. This will begin the Autotune procedure. During autotuning, the display will flash TUNE while the control is teaching itself the values that you did not set while you were in the Pid menu. This process will take from a few seconds to a minute, after which time TUNE will stop flashing. The control is now set up and should be functioning properly, controlling the temperature within 1 or 2 degrees of the setpoint temperature.
If TUNE does not stop flashing within about a minute, turn off the power to the machine then turn it back on again. Repeat step 2 checking each item in all the menus to ensure that the values are correct as indicated on the Menu Structure Diagram.
Restart the Autotune procedure.
Do not proceed to step 4 until the control is functioning properly

Step 4: "Locking" the control to limit access to the menus after the control is set up.
When step 3 is complete, the set up is complete. In order to hide access to the menus the control must be locked out.
Enter the OPERATION menu. Go into the CONFIGURATION menu. Step through to tAG. Set the tAG value to PCO.
The procedure is complete.
After the control is locked, it is still possible to enter the OPERATION menu, but Aut and CnFG will be the only selections. If you enter the CONFIGURATION menu, tAG will be the only selection. tAG must be accessible in order to unlock the control in the future.

6.4 *Electrical Problem*

If electrical problems arise, first check to see that the Model LS is plugged in and then check the condition of the circuit breaker located on the back panel. If this doesn't solve the problem, consult a qualified electrician or the factory. An electrical schematic is included with this manual.

7 Maintenance

7.1 *Teflon Cloth*

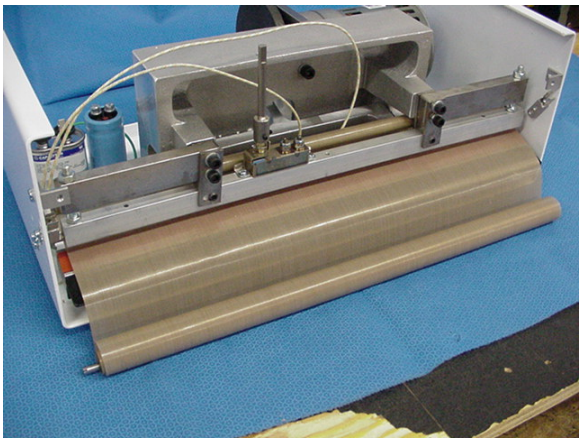


Figure 7-1 Teflon Cloth

The Model LS uses teflon impregnated fiberglass cloth looped under the sealing bar to prevent bagging material from sticking. In time the cloth will wear, giving poor seals. It is then necessary to advance the roll of cloth to a fresh portion as follows: The left side panel contains a hole labeled "Advance Cloth". The rod that carries the cloth can be seen through this hole. Engage a 1/8" screwdriver in the slot and turn in the direction indicated. Viewing the cloth through the jaw opening can see the amount of advancement.
Enough cloth is supplied on the Model LS to advance it about 20 to 25 times. When the cloth has been advanced as far as possible, the rod will turn no further. Replace the cloth and carrier rods as follows:

Step 1: Disconnect power cord plug from outlet and allow machine to cool.

Step 2: Remove temperature control knob by loosening set screw.

Step 3: Remove 2 front and 2 top screws, then lift cover up and away form the machine.

Step 4: Turn the front rod in the direction that will rewind the cloth onto it.

Step 5: Now pull the rear rod up and out of its retaining clips. Pass this rod under the sealing bar and out through the jaw opening. Pull the front rod up and out of its clips.

To install new cloth and rods, reverse the procedure taking care to locate the slotted end of the rods toward the left and locate the full roll in the front position. Take up any slack in the cloth. Replace cover as described above. Then re-install the control knob.

7.2 *Silicone Rubber*

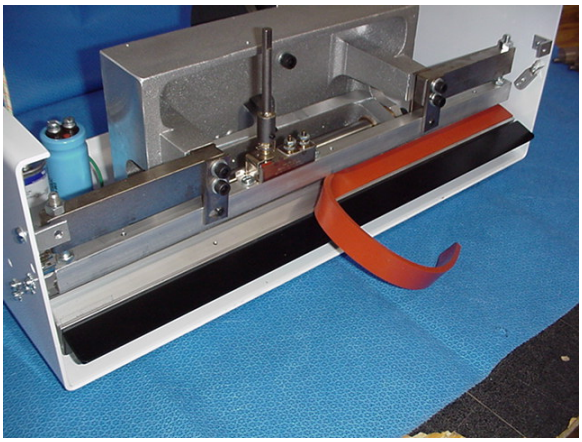


Figure 7-2 Silicone Rubber

If the red silicone rubber becomes soiled, it may be cleaned by first turning the machine off and allowing it to cool, then use a lint free cloth dampened with non-flammable cleaning solvent to wipe the rubber clean. To replace the rubber silicone strip, lift the old strip up out of the grooved mounting bar. Insert a new strip by laying it in position then pressing it into the groove. Make sure it is centered in the length of the bar.

7.3 *Cleaning*

Before cleaning the outside of the machine, turn the unit off and disconnect the power cord. A mild cleaning solution may be used to clean the outside of the Heat Sealer. Remove dust and debris from the inside of the unit with a dry dust cloth.

7.4 *Replacement of Thermal Switch*

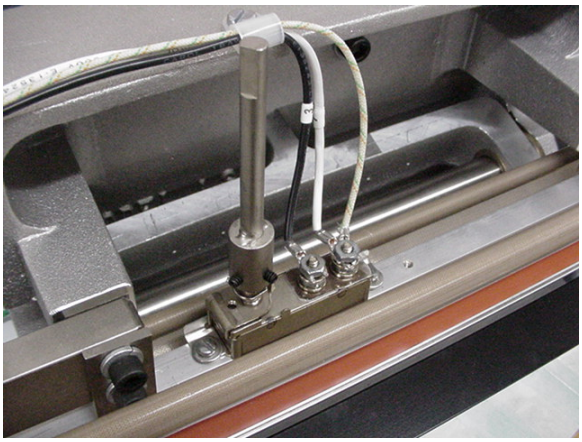


Figure 7-3 Thermal Switch

Disconnect power. Remove the adjustment knob by locating the set screw in the side of the knob and loosening it. Remove the top cover by removing the pan head screws that hold it in position.
Remove the shaft extension by loosening set screws. Remove 2 mounting screws from sealing bar and lift off the temperature control. Disconnect wires from temperature control terminals. Note the position of each sire and respective terminal.
Install new temperature control with the shaft to the left and the terminals toward the right end of the machine, connect wires to the proper terminals then tighten nuts.
Replace shaft extension and tighten setscrews.

NOTE: If temperature pilot lamp glows constantly or if it glows when temperature control is turned to its furthest counter-clockwise position, the wires have been connected improperly. Refer to the electrical schematic.

7.5 *Temperature Controller Replacement*

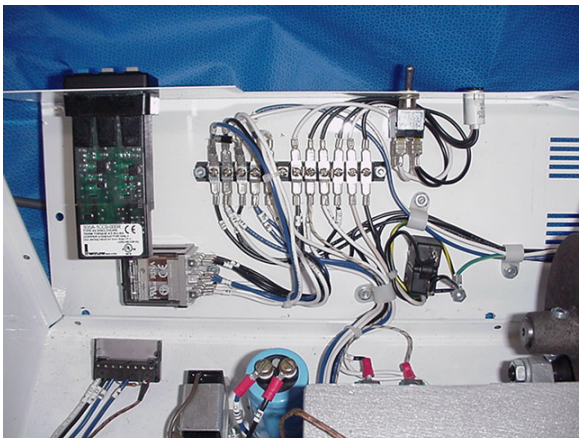
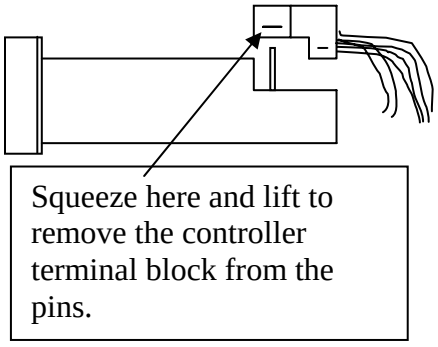


Figure 7-4 Temperature Controller

WARNING: POWER MUST BE DISCONNECTED BEFORE PERFORMING THE FOLLOWING PROCEDURE.

Replacing the temperature control

The temperature controller is equipped with a removable terminal block located at the top rear corner of the control which allows removal of the control without disconnecting individual wires. Grasp the serrations at each side, squeeze, and then pull straight upward to pull the terminal block off the controller pins. The control can then be removed by lifting the three top and bottom teeth of the retaining collar on the back side of the panel in order to pull the control out of the enclosure.



After placing the new control into the panel, push the retaining collar on so that the control is properly held in place, then reconnect the terminal block by aligning the pins then snapping it downward into position. Reconnect the power.

Controller setup

The control menus have been programmed and the temperature setpoint has been set for 400 degrees F (205 degrees C) at the factory. In addition, the control has been 'locked' at the factory which only allows access to the Autotune function and the setpoint adjustment. After the new control is installed and connected, all that remains is to 'autotune' the control and then adjust to the desired temperature setpoint.

Autotuning the control

Enter the OPERATION menu, select Aut and set to YES. This will begin the Autotune procedure. During autotuning, the display will flash TUNE while the control is teaching itself the values for your machine. This process will take from a few seconds to a minute, after which time TUNE will stop flashing. The control is now set up and should be functioning properly, controlling the temperature within 1 or 2 degrees of the setpoint temperature.

Now adjust the setpoint to your desired temperature.

7.6 *Replacement of the Heating Element*

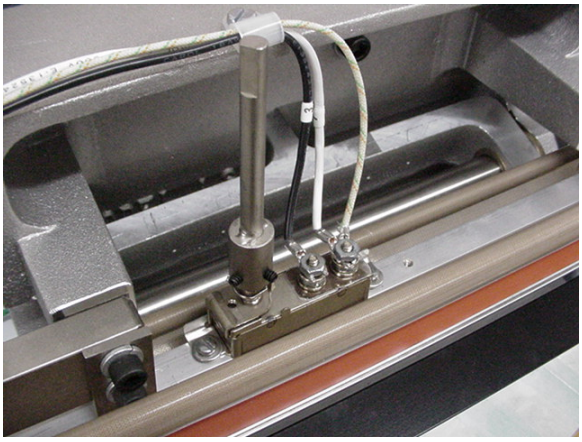


Figure 7-5 Heating Element

Note: Disconnect power supply and allow machine to cool, then remove cover and teflon roll.

Step 1: Disconnect the element leads from the terminal strip located on the inside of the back panel.

Step 2: Remove the (2) mounting screws of the thermoswitch assembly and place entire switch assembly on inner frame conveniently out of the way. **DO NOT REMOVE REMAINING SWITCH CONTROL**.

Step 3: Loosen the (4) socket head cap screws of the bar mounting clip assemblies sufficiently enough to allow entire seal bar assembly to roll out of the clips, free of the machine.

Step 4: Loosen the (3) set screws on top of seal bar and remove old element from bore. Install new element with left end protruding approximately 1/8”from end of seal bar and snug-up set screws.
Note: DO NOT over-tighten set screws as damage to heating element may occur.

Step 5: Reinstall seal bar, thermoswitch, and element connections as required, reversing disassembly procedure.
NOTE: Leave an equal length of element protruding from each end of the sealing bar. Tighten all connections.

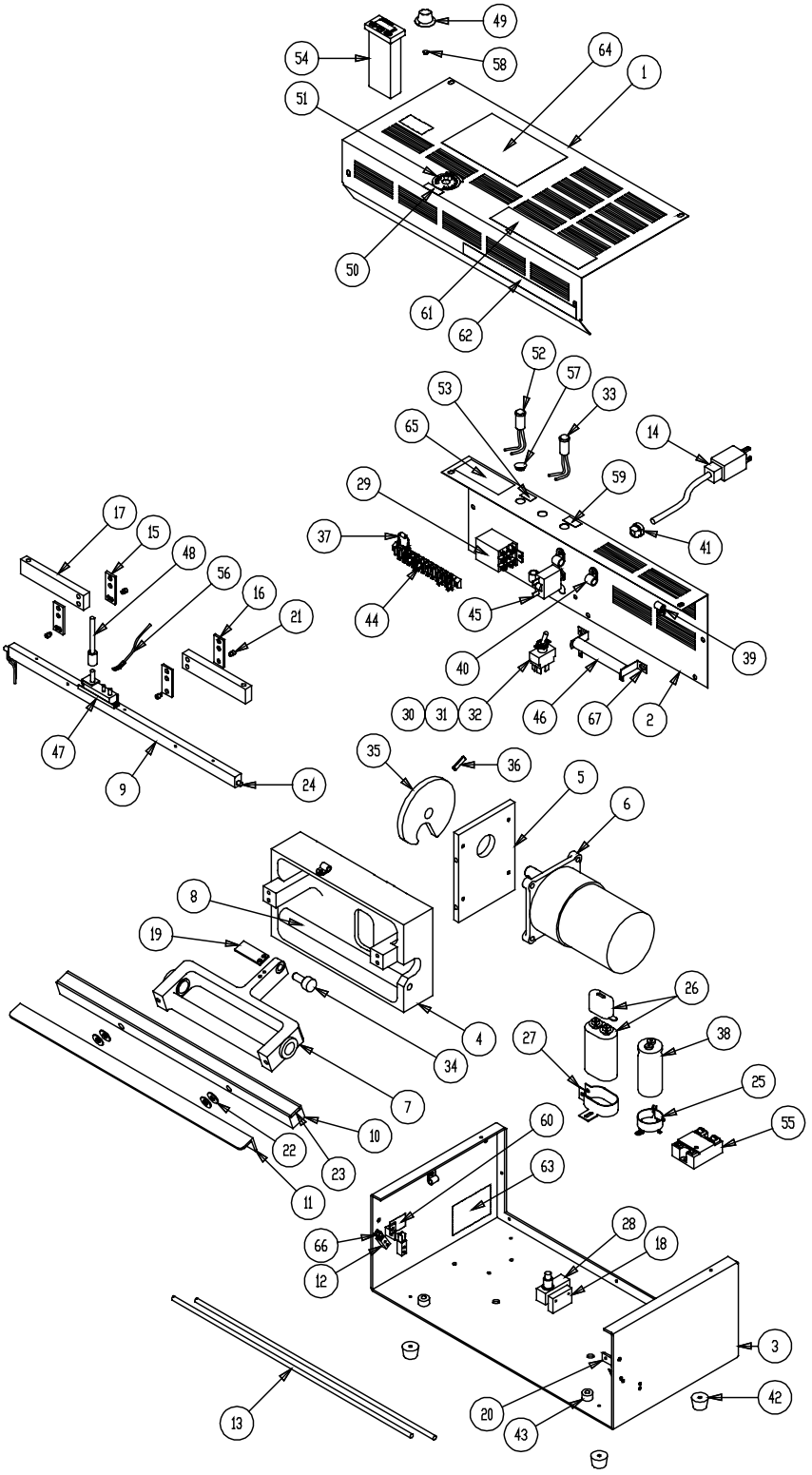
7.7 *Seal Bar Brace (18" Models Only)*

Figure 7-6 Seal Bar Brace

Located at each end and above the seal bar, the seal bar brace serves to help stiffen the seal bar against the pressure of sealing. At the end of the seal bar brace is a screw that bears against the top surface of the seal bar. It is factory adjusted to give even pressure along the length of the seal bar and should not require adjustment. However, if adjustment should be needed, it is a simple matter to turn the screw clockwise (viewed from above the screw) to increase pressure, counter clockwise to decrease pressure. After adjusting, use a straight edge to check straightness of the seal bar.

8 Spare Parts

8.1 *Model 18 LS Parts Drawings*

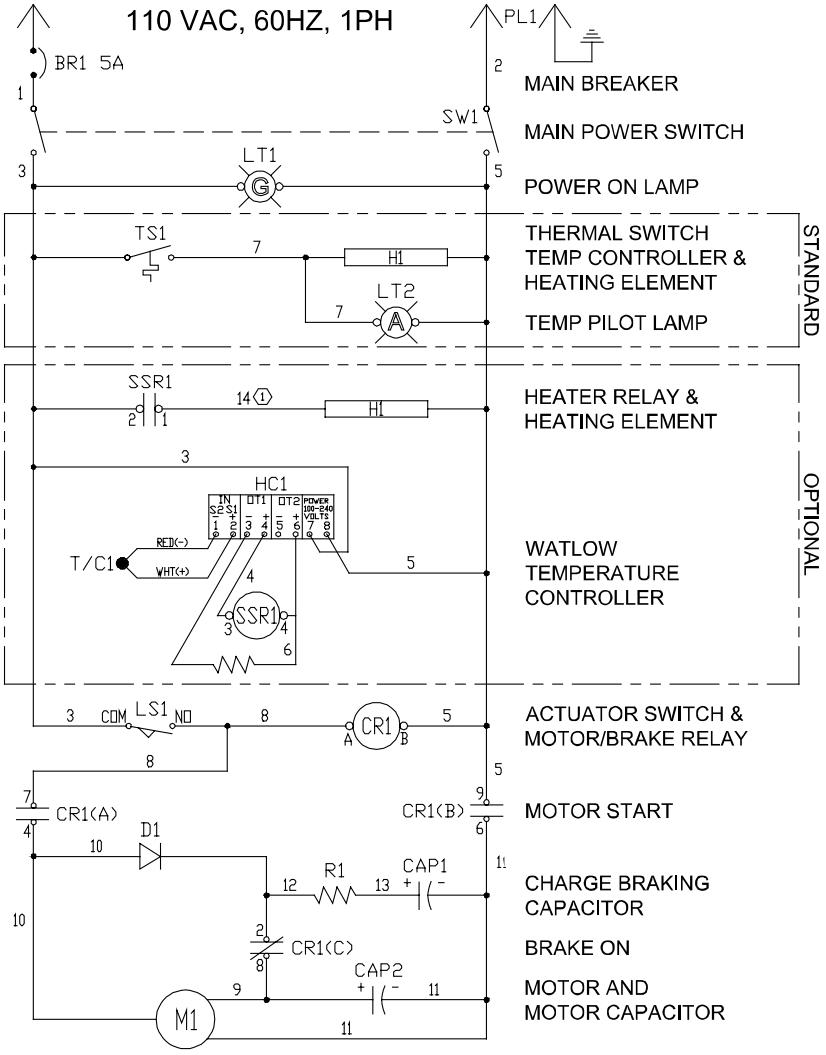


8.2 *Model 18 LS Parts List*

ITEM	PART NUMBER	DESCRIPTION	QTY
1	L073CC	COVER (USED WITH STANDARD THERMAL SWITCH)	1
	L169CA	COVER (USED WITH OPTIONAL WATLOW CONTROLLER)	
2	L074CA	BACK PANEL (110V MODEL)	1
	L165CA	BACK PANEL (220V MODEL)	
3	L075DA	BASE PAN (USED WITH STANDARD THERMAL SWITCH)	1
	M0017623	BASE PAN MOD. (USED WITH OPTIONAL WATLOW CONTROLLER)	
4	L047CD	INNER FRAME CASTING	1
5	L069BB	MOTOR MOUNT	1
6	L068BA	GEAR MOTOR (110V MODEL)	1
	L167BA	GEAR MOTOR (220V MODEL)	
7	L011CE	LIFT BAR PIVOT CASTING ASSEMBLY	1
8	L015BD	PIVOT SHAFT	1
9	L089CA	SEAL BAR	1
10	L007BC	RUBBER MOUNT	1
11	L019BC	LIFT BAR	1
12	L020AA	TEFLON CLOTH ROD CLIP MOUNT	4
13	L044BA	TEFLON CLOTH AND ROD ASSEMBLY	1
14	P0000590	CORDSET (110 V MODEL)	1
	P0000606	CORDSET (220 V MODEL)	
15	L022ACP1	SEAL BAR MOUNTING PLATE (SLOTTED HOLE)	2
16	L022ACP2	SEAL BAR MOUNTING PLATE (ROUND HOLE)	2
17	L111AA	SEAL BAR BRACE	2
18	L052AB	MOTOR SWITCH MOUNTING BLOCK	1
19	L026AB	MOTOR SWITCH ACTUATOR PLATE	1
20	L051AA	COVER MOUNTING CLIP	2
21	L031AB	SEAL BAR MOUNTING SCREW	4
22	P0000601	NYLON WASHER	4
23	L045AB	HIGH TEMP SILICONE RUBBER STRIP	1
24	L071BC	18" HEATING ELEMENT (110V MODEL)	1
	L160BA	18" HEATING ELEMENT (220V MODEL)	
25	P0000609	BRAKE CAPACITOR MOUNT (110V MODEL)	1
	P0003211	BRAKE CAPACITOR MOUNT (220V MODEL)	
26	P0000315	MOTOR CAPACITOR (110V MODEL)	1
	P0000613	MOTOR CAPACITOR (220V MODEL)	
27	P0000576	MOTOR CAPACITOR MOUNT	1
28	P0000334	MOTOR SWITCH	1
29	P0004188	MOTOR RELAY (110V MODEL)	1
	P0000603	MOTOR RELAY (220V MODEL)	
30	P0000578	MAIN POWER TOGGLE SWITCH	1
31	P0000579	TOGGLE SWITCH LOCKWASHER	1
32	P0000717	TOGGLE SWITCH ON/OFF PLATE	1
33	P0000581	GREEN LAMP (110V MODEL)	1
	P0000604	RED LAMP (220V MODEL)	

34	P0000377	CAM FOLLOWER	1
35	L028BG	CAM	1
36	HARDWARE	SPRING PIN (1/4 DIA. X 7/8 LG.)	1
37	P0000583	MOTOR DIODE	1
38	P0000584	BRAKE CAPACITOR (110V MODEL)	1
	P0000602	BRAKE CAPACITOR (220V MODEL)	
39	P0000113	CABLE CLAMP (1/4")	
40	P0000056	CABLE CLAMP (3/8")	
41	P0000585	POWER CORD STRAIN RELIEF	1
42	P0000586	RUBBER FEET	4
43	P0000587	RUBBER BUMPER	2
44	L094AA	TERMINAL BLOCK ASSEMBLY	1
45	P0000328	CIRCUIT BREAKER (110V MODEL)	1
	P0000608	CIRCUIT BREAKER (220V MODEL)	
46	P0000535	RESISTOR (110V MODEL)	1
	P0000605	RESISTOR (220V MODEL)	
ITEMS 47-53 COMPRISE THE STANDARD THERMAL SWITCH HEATER CONTROLLER			
47	P0000591	THERMAL SWITCH	1
48	L027AD	SHAFT EXTENSION ASSEMBLY	1
49	P0000319	HEATER CONTROLLER KNOB	1
50	L084AAP2	"TEMPERATURE CONTROL" LABEL	1
51	L093AA	HEATER CONTROLLER DIAL PLATE	1
52	P0000582	AMBER LAMP (110V MODEL)	1
	P0000607	AMBER LAMP (220V MODEL)	
53	L084AAP4	"TEMP PILOT" LABEL	1
ITEMS 54-58 COMPRISE THE OPTIONAL WATLOW HEATER CONTROLLER ITEMS 47-53 ARE NO LONGER USED WHEN THE WATLOW HEATER CONTROLLER IS USED			
54	M0018536	WATLOW HEATER CONTROLLER AND RESISTOR ASSEMBLY	1
55	P0000023	SOLID STATE RELAY	1
56	P0001851	THERMOCOUPLE	1
57	P0000036	HOLE PLUG	1
58	P0004519	HOLE PLUG	1
59	L084AAP3	"POWER ON" LABEL	1
60	L084AAP1	"ADVANCE CLOTH" LABEL	1
61	L083AB	"CAUTION TO PROTECT AGAINST ELECTRICAL SHOCK,..ETC." LABEL	1
62	L086AB	"WARNING-DO NOT PLACE HANDS OR OBJECTS…ETC" LABEL	1
63	L087AB	RENNCO NAME PLATE	1
64	L082AE	RENNCO INSTR. LABEL (USED WITH STANDARD THERMAL SWITCH)	1
	L159AA	RENNCO INSTR. LABEL (USED WITH OPT. WATLOW CONTROLLER)	
65	L113AA	"FOR SERVICE AND PARTS CONTACT:..." LABEL	1
66	P0000573	ROD CLIP	4
67	P0000589	RESISTOR MOUNTING KIT	1

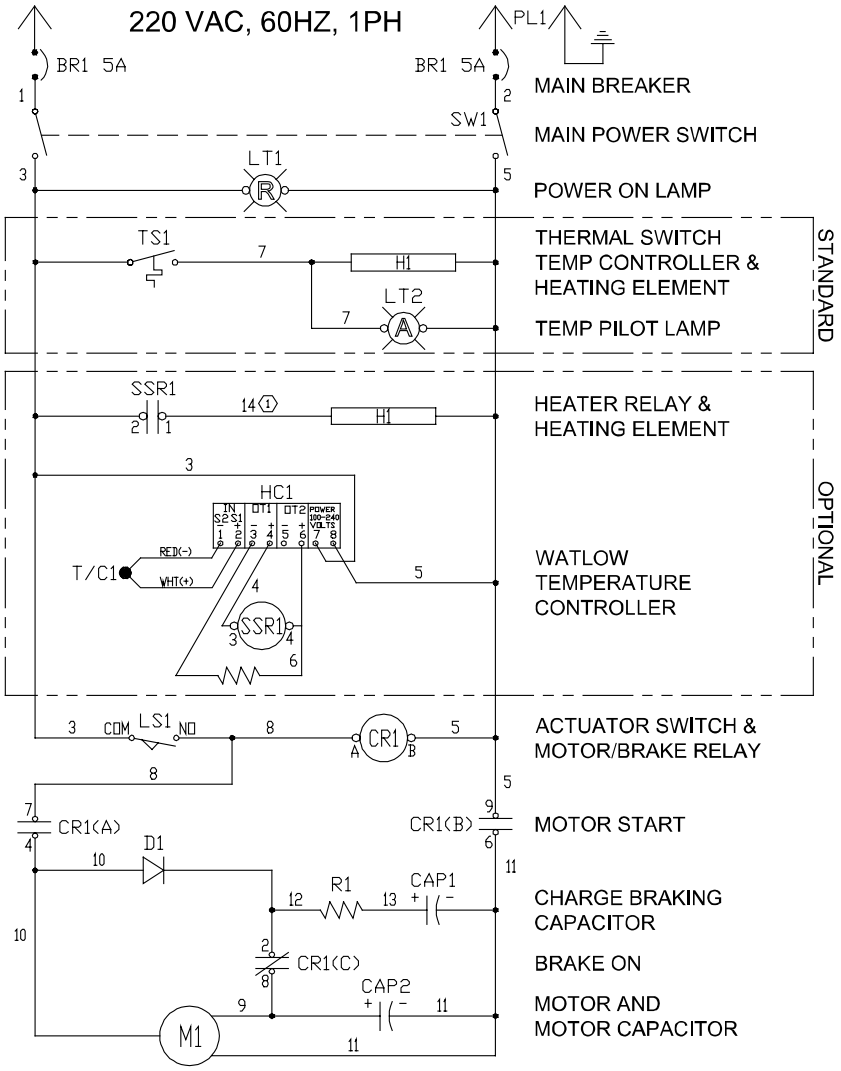
8.3 *Model 18 LS 110V Electrical Circuit*



NOTE THAT BOTH THE STANDARD AND OPTIONAL HEATER CONTROLLERS ARE SHOWN IN THE ABOVE CIRCUIT. ONLY ONE OF THE CONTROLLER STYLES IS USED IN YOUR LIFT SEAL. REFER TO THE EXPLODED VIEW DRAWING TO IDENTIFY THE CONTROLLER USED IN YOUR UNIT.

ITEM	QTY	PART NUMBER	DESCRIPTION
TS1	1	P0000591	THERMAL SWITCH
T/C1	1	P0001857	THERMOCOUPLE
SW1	1	P0000578	TOGGLE SWITCH
SSR1	1	P0000023	SOLID STATE RELAY
R1	1	P0000535	RESISTOR
PL1	1	P0000590	CORDSET
M1	1	L068BA	GEAR MOTOR
LT2	1	P0000582	AMBER LAMP
LT1	1	P0000581	GREEN LAMP
LS1	1	P0000334	LIMIT SWITCH
HC1	1	P0000022	WATLOW HEATER CONTROLLER
H1	1	L071BC	HEATER ELEMENT
D1	1	P0000583	DIODE
CR1	1	P0004188	RELAY
CAP2	1	P0000575	MOTOR CAPACITOR
CAP1	1	P0000584	BRAKE CAPACITOR
BR1	1	P0000328	CIRCUIT BREAKER (5 AMP)

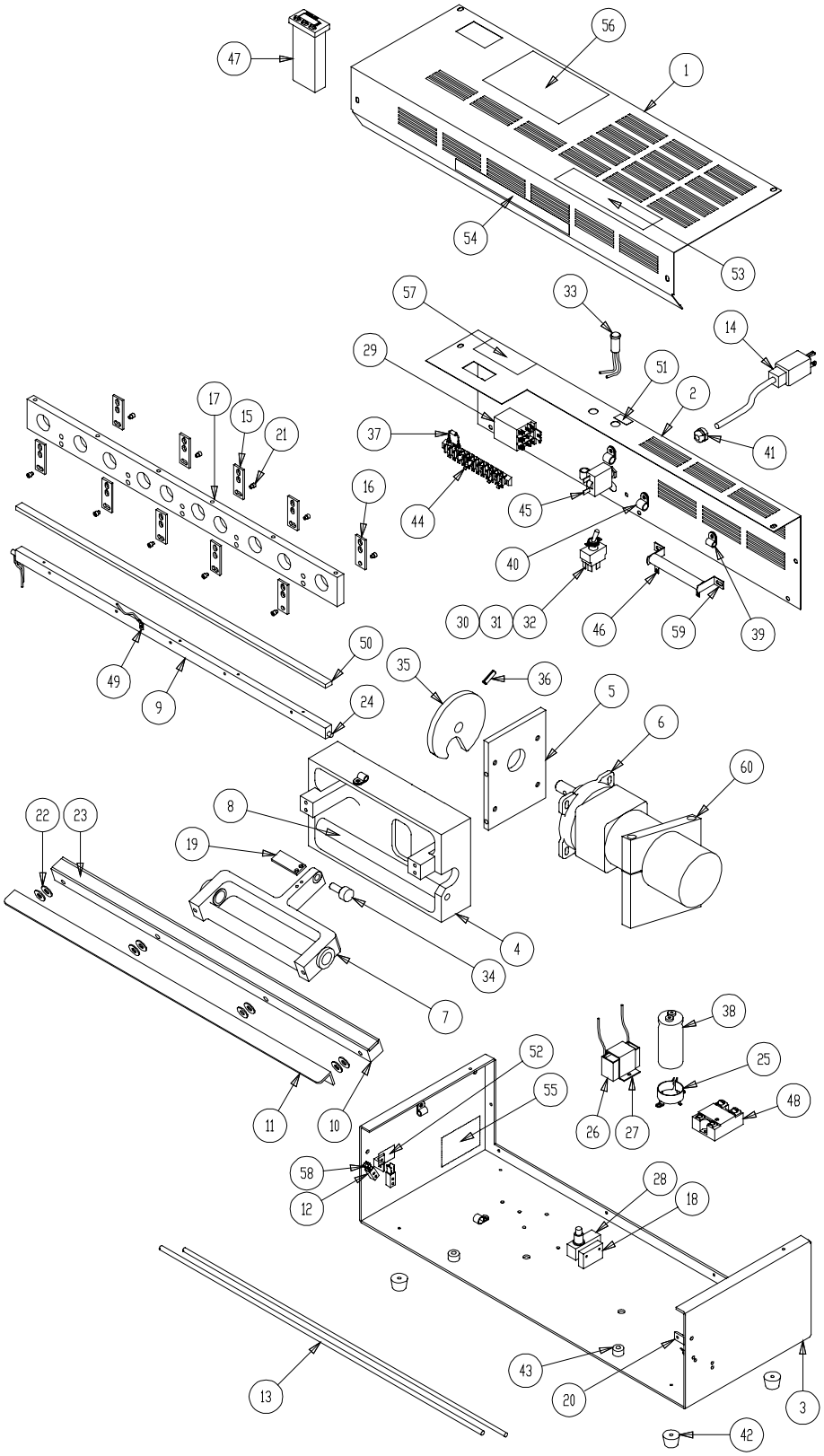
8.4 *Model 18 LS 220V Electrical Circuit*



NOTE THAT BOTH THE STANDARD AND OPTIONAL HEATER CONTROLLERS ARE SHOWN IN THE ABOVE CIRCUIT. ONLY ONE OF THE CONTROLLER STYLES IS USED IN YOUR LIFT SEAL. REFER TO THE EXPLODED VIEW DRAWING TO IDENTIFY THE CONTROLLER USED IN YOUR UNIT.

ITEM	QTY	PART NUMBER	DESCRIPTION
TS1	1	P0000591	THERMAL SWITCH
T/C1	1	P0001857	THERMOCOUPLE
SW1	1	P0000578	TOGGLE SWITCH
SSR1	1	P0000023	SOLID STATE RELAY
R1	1	P0000605	RESISTOR
PL1	1	P0000606	CORDSET
M1	1	L167BA	GEAR MOTOR
LT2	1	P0000607	AMBER LAMP
LT1	1	P0000604	RED LAMP
LS1	1	P0000334	LIMIT SWITCH
HC1	1	P0000022	WATLOW HEATER CONTROLLER
H1	1	L160BA	HEATER ELEMENT
D1	1	P0000583	DIODE
CR1	1	P0000603	RELAY
CAP2	1	P0000613	MOTOR CAPACITOR
CAP1	1	P0000602	BRAKE CAPACITOR
BR1	1	P0000608	CIRCUIT BREAKER (5 AMP)

8.5 *Model 24 LS Parts Drawings*

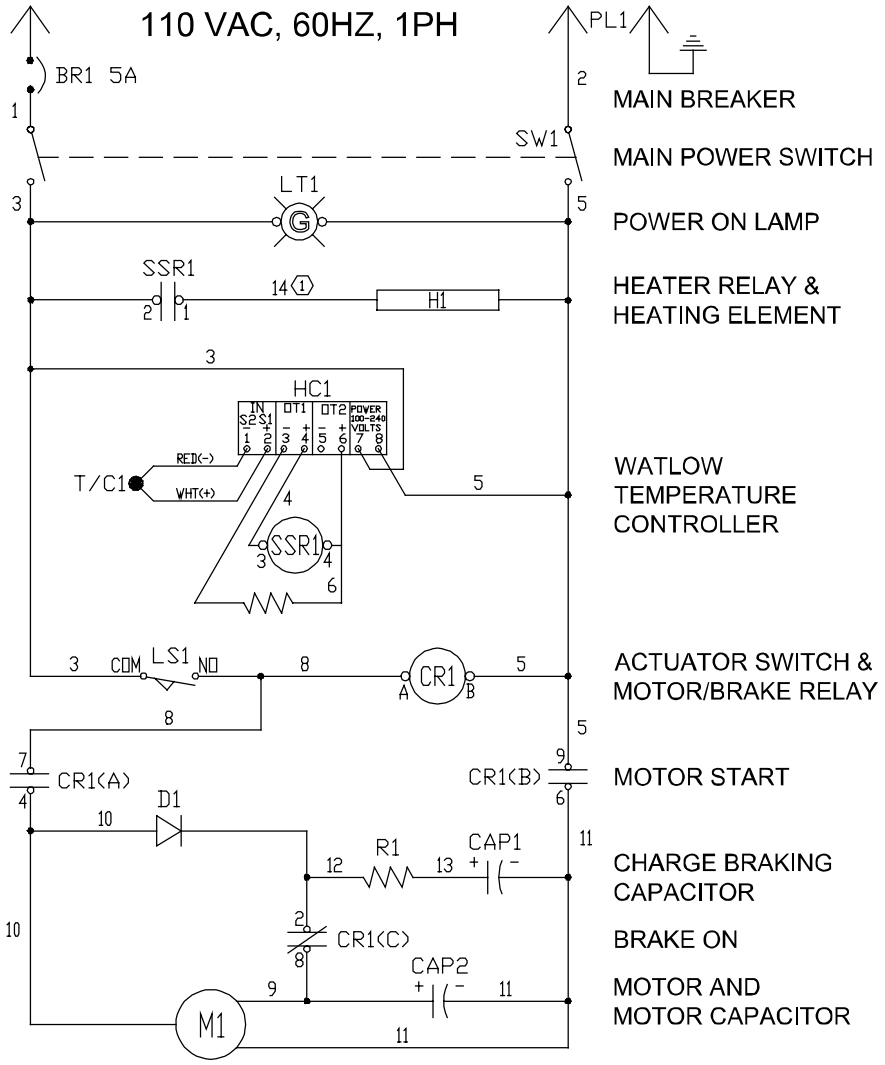


8.6 *Model 24 LS Parts List*

ITEM	PART NUMBER	DESCRIPTION	QTY
1	L154CA	COVER	1
2	L153CA	BACK PANEL (110V MODEL)	1
	L166CA	BACK PANEL (220V MODEL)	
3	L152DA	BASE PAN	1
4	L047CD	INNER FRAME CASTING	1
5	L151BA	MOTOR MOUNT	1
6	L145BA	GEAR MOTOR (110V MODEL)	1
	L164BA	GEAR MOTOR (220V MODEL)	
7	L011CE	LIFT BAR PIVOT CASTING ASSEMBLY	1
8	L015BD	PIVOT SHAFT	1
9	L149DA	SEAL BAR	1
10	L143BA	RUBBER MOUNT	1
11	L144BA	LIFT BAR	1
12	L020AA	TEFLON CLOTH ROD CLIP MOUNT	4
13	L156BA	TEFLON CLOTH AND ROD ASSEMBLY	1
14	P0000590	CORDSET (110 V MODEL)	1
	P0000606	CORDSET (220 V MODEL)	
15	L146AA	SEAL BAR MOUNTING PLATE (SLOTTED HOLE)	8
16	L147AA	SEAL BAR MOUNTING PLATE (ROUND HOLE)	2
17	L150DA	SEAL BAR BRACE	1
18	L052AB	MOTOR SWITCH MOUNTING BLOCK	1
19	L026AB	MOTOR SWITCH ACTUATOR PLATE	1
20	L051AA	COVER MOUNTING CLIP	2
21	L031AB	SEAL BAR MOUNTING SCREW	10
22	P0000601	NYLON WASHER	8
23	L142AA	HIGH TEMP SILICONE RUBBER STRIP	1
24	L139BA	24" HEATING ELEMENT (110V MODEL)	1
	L161BA	24" HEATING ELEMENT (220V MODEL)	
25	P0000609	BRAKE CAPACITOR MOUNT (110V MODEL)	1
	P0003211	BRAKE CAPACITOR MOUNT (220V MODEL)	
26	P0004520	MOTOR CAPACITOR (110V MODEL)	1
	P0004521	MOTOR CAPACITOR (220V MODEL)	
27	L157BA	MOTOR CAPACITOR MOUNT	1
28	P0000334	MOTOR SWITCH	1
29	P0004188	MOTOR RELAY (110V MODEL)	1
	P0000603	MOTOR RELAY (220V MODEL)	
30	P0000578	MAIN POWER TOGGLE SWITCH	1
31	P0000579	TOGGLE SWITCH LOCKWASHER	1
32	P0000717	TOGGLE SWITCH ON/OFF PLATE	1
33	P0000581	GREEN LAMP (110V MODEL)	1
	P0000604	RED LAMP (220V MODEL)	
34	P0000377	CAM FOLLOWER	1
35	L028BG	CAM	1
36	HARDWARE	SPRING PIN (1/4 DIA. X 7/8 LG.)	1
37	P0000583	MOTOR DIODE	1

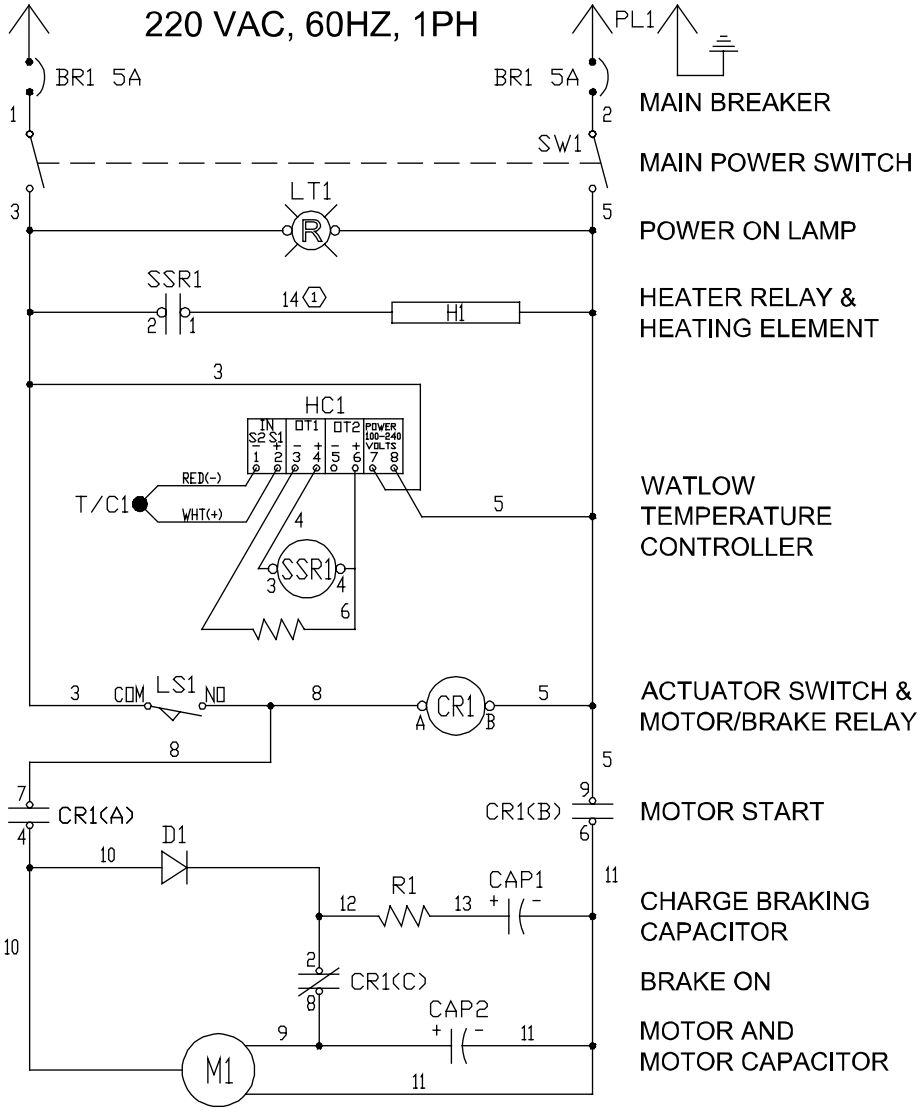
38	P0000584	BRAKE CAPACITOR (110V MODEL)	1
	P0000602	BRAKE CAPACITOR (220V MODEL)	
39	P0000113	CABLE CLAMP (1/4")	
40	P0000056	CABLE CLAMP (3/8")	
41	P0000585	POWER CORD STRAIN RELIEF	1
42	P0000586	RUBBER FEET	4
43	P0000587	RUBBER BUMPER	2
44	L094AA	TERMINAL BLOCK ASSEMBLY	1
45	P0000328	CIRCUIT BREAKER (110V MODEL)	1
	P0000608	CIRCUIT BREAKER (220V MODEL)	
46	P0000535	RESISTOR (110V MODEL)	1
	P0000605	RESISTOR (220V MODEL)	
47	M0018536	WATLOW HEATER CONTROLLER WITH RESISTOR ASSEMBLY	1
48	P0000023	SOLID STATE RELAY	1
49	L158BA	THERMOCOUPLE ASSEMBLY	1
50	L148AA	SEAL BAR STIFFNER	1
51	L084AAP3	"POWER ON" LABEL	1
52	L084AAP1	"ADVANCE CLOTH" LABEL	1
53	L083AB	"CAUTION TO PROTECT AGAINST ELECTRICAL SHOCK,..ETC." LABEL	1
54	L086AB	"WARNING-DO NOT PLACE HANDS OR OBJECTS…ETC" LABEL	1
55	L087AB	RENNCO NAME PLATE	1
56	L159AA	RENNCO INSTRUCTION LABEL	1
57	L113AA	"FOR SERVICE AND PARTS CONTACT:..." LABEL	1
58	P0000573	ROD CLIP	4
59	P0000589	RESISTOR MOUNTING KIT	1
60	M0020116	MOTOR SUPPORT CLAMP	1

8.7 *Model 24 LS 110V Electrical Circuit*



ITEM	QTY	PART NUMBER	DESCRIPTION
T/C1	1	L158BA	THERMOCOUPLE
SW1	1	P0000578	TOGGLE SWITCH
SSR1	1	P0000023	SOLID STATE RELAY
R1	1	P0000535	RESISTOR
PL1	1	P0000590	CORDSET
M1	1	L145BA	GEAR MOTOR
LT1	1	P0000581	GREEN LAMP
LS1	1	P0000334	LIMIT SWITCH
HC1	1	P0000022	WATLOW HEATER CONTROLLER
H1	1	L139BA	HEATER ELEMENT
D1	1	P0000583	DIODE
CR1	1	P0004188	RELAY
CAP2	1	P0004520	MOTOR CAPACITOR
CAP1	1	P0000584	BRAKE CAPACITOR
BR1	1	P0000328	CIRCUIT BREAKER (5 AMP)

8.8 *Model 24 LS 220V Electrical Circuit*



ITEM	QTY	PART NUMBER	DESCRIPTION
T/C1	1	L158BA	THERMOCOUPLE
SW1	1	P0000578	TOGGLE SWITCH
SSR1	1	P0000023	SOLID STATE RELAY
R1	1	P0000605	RESISTOR
PL1	1	P0000606	CORDSET
M1	1	L164BA	GEAR MOTOR
LT1	1	P0000604	RED LAMP
LS1	1	P0000334	LIMIT SWITCH
HC1	1	P0000022	WATLOW HEATER CONTROLLER
H1	1	L161BA	HEATER ELEMENT
D1	1	P0000583	DIODE
CR1	1	P0000603	RELAY
CAP2	1	P0004521	MOTOR CAPACITOR
CAP1	1	P0000602	BRAKE CAPACITOR
BR1	1	P0000608	CIRCUIT BREAKER (5 AMP)